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Additional notes on the Heterocera fauna of Mt. Pulaq (Luzon, Philippines)

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Abstract: Additional notes on the Heterocera fauna of Mt. Pulaq (Luzon, Philippines). *Misc. Pap.* 200: 1-10, 24 figs, 1 map

In this paper, complementary notes to the fauna of Mt. Pulaq (Luzon Island) are given with some comments. Totally 19 species of four families are added to the fauna. Among them two species are reported as new for the Philippines.

Key words: Geometridae, Noctuidae, Notodontidae, Pyralidae, Lepidoptera, fauna, Philippines, Luzon, Mt. Pulaq.

Recently the authors listed 118 taxa of the Heterocera from Mt. Pulaq (Luzon Island) (Kemal *et al.*, 2019b). In this complementary paper on the Heterocera fauna of Mt. Pulaq, 19 species are mentioned newly. Among them, two species are reported here as new for the fauna of the Philippines. The female genitalia of *Acolutha plumbipicta* and male genitalia of *Trachea auriplena* are illustrated here for the first time. Together with the evaluations of new results, total number of Heterocera species of Mt. Pulaq increased to 137.

List of the species

Geometridae

1.*Acolutha plumbipicta* (West,1929) **(Figs. 1-3)**

Synonymy: *plumbipicta* West,1929

Original Reference: *Hastina plumbipicta* West,1929, Novit.zool. 35: 125. Type ♀: Philippines, Luzon, Benguet, Pauai, Haight's Place (BMNH).

Range (as codes): **PH Luz Pq**

Material studied: 1♀ (GP3165). Philippines: Luzon Is., Baguio, Mt. Pulaq 1500m, 10.i.1999, native collector (Cesa).

Remarks: Description of the female "*Hastina plumbipicta*" is somewhat nearer to our specimen. Holloway (1976) described *Acolutha albipunctata* from Borneo. Later, he mentioned the similarity of *plumbipicta* with *albipunctata* and transferred *plumbipicta* to the genus *Acolutha*. Holloway (1997) stated on this matter: "*A. plumbipicta* West comb.n. from the mountains of Luzon, Philippines, has similar facies, but the grey costal and marginal zone of the forewing is more interrupted by yellow and generally broader. The fasciae are somewhat less sinuous."

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Stüning (pers. comm.) confirmed the specific identity of *plumbipicta*. The female genitalia of the species is first illustrated here. Comparing with that of *Acolutha albipunctata* from Borneo, the bursa copulatrix of *plumbipicta* appears more ovoid in shape, with ornamented surface. A small clamshell pocket covered by long hairs on the surface is interesting **(Fig.)**.

Figs. 1-3 – Female of *Acolutha plumbipicta* (Geometridae). Upperside (left top), underside (top right). Genitalia (GP3165). Corpus bursae enlarged. A small clamshell pocket covered by long hairs on corpus bursae marked with white arrow (bottom right). Philippines, Luzon, Mt. Pulaq. M.Kemal (Cesa).

2.*Bracca leofendti* Stüning,2019 (Figs. 4,5)

Synonymy: *leofendti* Stüning,2019

Original Reference: *Bracca leofendti* Stüning,2019, Tinea 24 (4): 311-316, figs. Holotype ♂: Philippinen, Luzon, Prov. Ifugao, Mt. Polis Pass, 20km N Banaue, 2000m, leg. R.Brechlin (ZFMK).

Range (as codes): **PH Luz Ifg Pq**

Material studied: 2♂2♀. Philippines: Luzon Is., Baguio, Mt. Pulaq 1500m, 10.i.1999, native collector (Cesa).

Remarks: Few days ago, Dr. Stüning kindly sent a copy of his important paper on the genus *Bracca* from the Philippines. After checking of *Bracca* material from Mt.Pulaq, we found 4 specimens of *Bracca leofendti*, newly described by Stüning (2019) from Luzon Island. Now, two *Bracca* species inhabit on this Mountain, *i.e., georgiata* and *leofendti*. The former is also represented by the subspecies *luzonica* Stüning,2019 on Mt. Pulaq. These species can be easily identified by their sizes and other external features especially underside of the wings, as well as the genital morphology.

Figs. 4, 5 – *Bracca leofendti* (Geometridae). Upperside (left), underside (right). Wingspan: 77mm. Philippines, Luzon Is., Mt. Pulaq. M.Kemal (Cesa)

3.*Fascellina* sp. (Figs. 6-9)

Material studied: 2 ♂ (GP3170). Philippines: Luzon Is., Baguio, Mt. Pulaq 1500m, 10.i.1999. - 2 ♂. Philippines, Mindanao Island, Davao del Norte, Mt. Caragan, 20-26.01.1998, local collector (Cesa).
Remarks: According to our knowledge, this species of the genus *Fascellina* inhabits in Mindanao and Luzon (see also: Kemal *et al.*, 2019a: 10, nr.27). Possibly, it is widely distributed also in other islands of the country. Its specific identity remained unclear up to now. Stüning (pers. comm. on 30 Nov., 2019) kindly informed us on this matter and stated finally: "*Fascellina* from the Philippines deserves a thorough revision".

Figs. 6-9 – Male of *Fascellina* sp. (Geometridae). Upperside (top left), underside (top right). Tympanal organs (before & after preparation) (bottom left). Genitalia (GP3170), and a pair of scent organ with long hairs. Philippines, Luzon Is., Mt. Pulaq. M. Kemal (Cesa).

4.*Xerodes ypsaria* Guenée,[1858]

Synonymy: *ypsaria* Guenée,[1858]; *testacearia* Moore,1868
Original Reference: *Xerodes ypsaria* Guenée,[1858], [*in*] Boisduval & Guenée, Hist. nat. Insectes, Spec. Gen. Lep. 9 (1857): 291. Type ♂: "Borneo".
Range (as codes): **IN SI Djl MY Bor ID Clb TH CMa PH Mno Bkd Crg Ley Blc Luz Pq**
Material studied: 1♀. Philippines: Luzon Is., Baguio, Mt. Pulaq 1500m, 10.i.1999, native collector (Cesa).
Remarks: This species was omitted in the previous paper (Kemal, *et al.*, 2019b).

Noctuidae

5.*Aedia leucomelas* (Linnaeus,1758) (Figs. 10, 11; Map 1)

Synonymy: *leucomelas* Linnaeus,1758; *ramburii* Boisduval,1829; *adepta* Geyer,[1832]; *olivascens* Guenée,1852; *acronyctoides* Guenée,1852; *limitaris* Walker,[1863]; *shisa* Strand,1920; *thomae* A.E.Prout,1927; *albodiscalis* Roepke,1932; *diluta* Roepke,1941; *ermanniae* Berio,1989
Original Reference: *Phalaena leucomelas* Linnaeus,1758, Syst. Nat. (Edn.10) 1: 518. Type(s): Europa.

Range (as code): **ZA MA DZ Hrh Agi TN PT ES Mu FR Co Sa Si IT MT CH AT HU RO YU AL BG GR TR GG Tbl Mng AZ Kir Len AM Cc RU Kr CY LB IR Mz Elb Clu Th Gls KP KR JP CN NC FJ GU NH LA KH VN MM MY Bor Swk Sbh TH Knc CMa Int Lmp Nan Rng PG WS LK IN Mh Nsk NP TW PH Boh Ceb Luz Pq Mdo Neg Mpl Pal Mno Crg ID Ja Sum Tim Flo Sbw Clb AU Vau TA NSw QAu Sau**

Material studied: 1♀ (GP3163). Philippines: Luzon Is., Baguio, Mt. Pulaq 1500m, 10.i.1999, native collector (Cesa).

Remarks: This species was omitted in the previous paper (Kemal, *et al.*, 2019b). Previous distributional map of this species was published by Koçak & Kemal (2015: 518, map 161).

Figs. 10, 11 - *Aedia leucomelas* (Noctuidae). Upperside of female (enlarged) and female genitalia (GP3163). Philippines, Luzon Is., Mt. Pulaq. M. Kemal (Cesa)

6. *Amphipyra* aff. *strigata* D.S.Fletcher,1968

Synonymy: #*strigata* W.Warren,1911; #*murreensis* Strand,1916; *strigata* D.S.Fletcher,1968

Original Reference: *Amphipyra strigata* D.S.Fletcher,1968, Entomologist's Gaz. 19: 103, figs. 5,6. Holotype ♂: India: Himachal Pradesh, Dalhousie (BMNH).

Range (as code): **IN Hp Dlh PK Mre CN MM? NP TH CMa PH? Luz? Pq?**

Material studied: 3 ex. (wingspan 62mm). Philippines: Luzon Is., Baguio, Mt. Pulaq 1500m, 10.i.1999, native collector (Cesa).

Remarks: This species was identified here temporarily (*vide*: Kemal, *et al.*, 2019b: 13, nr.46). Externally, it looks like to *strigata*; however the genitalia couldnot be compared so far. If this identity is correct; then the present record may be considered as new for the fauna of the Philippines (Kononenko & Pinratana, 2013).

7. *Blenina quinaria* Moore,1882 **(Figs. 12, 13)**

Synonymy: *quinaria* Moore,1882

Original Reference: *Blenina quinaria* Moore,1882, Descr. Indian lepid. Atkinson (2): 158, pl.v fig.5. Type: "Darjiling".

Range (as code): **IN Djl NP LA CN Yu VN MY Bor BN PH Luz Pq Mno Mdo TH CMa Lmp ID Sum Bli Clb Flo Tim PG JP**

Material studied: 1♂ (GP3169). Philippines: Luzon Is., Baguio, Mt. Pulaq 1500m, 10.i.1999, native collector (Cesa).

Remarks: This species was omitted in the previous paper (Kemal *et al.*, 2019b). In the course of preparation of the male genitalia, aedeagus was lost. However, its shape was sinuous, slender and without cornutus. It has also been illustrated during preparation **(Fig. 13).**

8.*Checupa major* Hreblay & Thöny,1995 (Figs. 14, 15)

Synonymy: *major* Hreblay & Thöny,1995

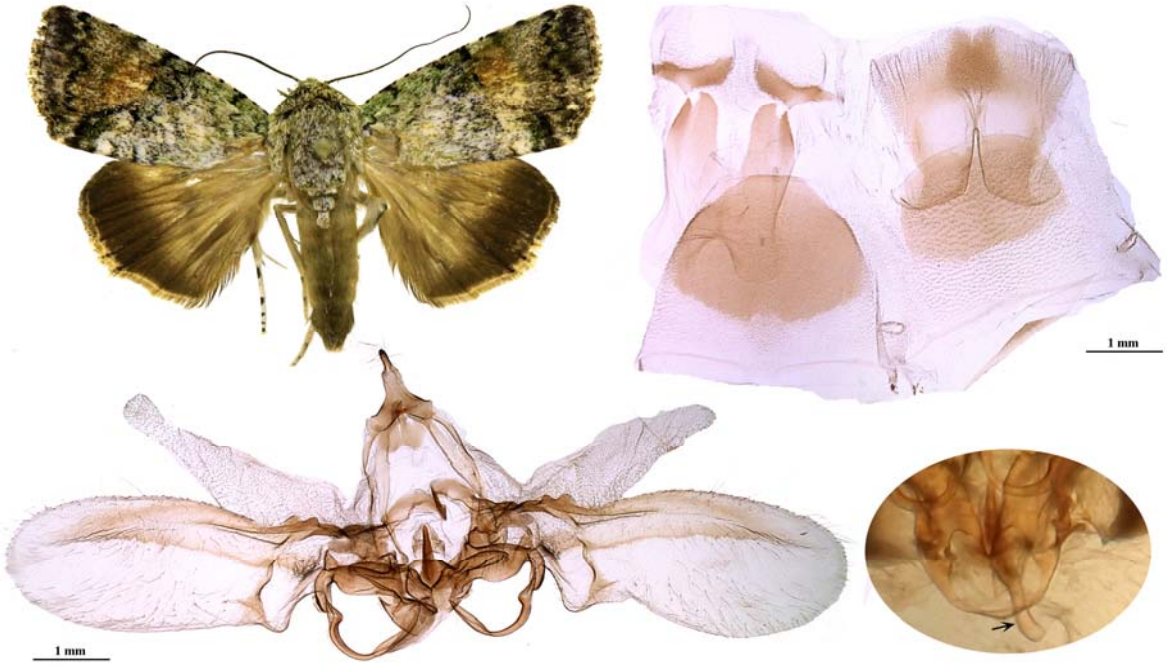
Original Reference: *Checupa major* Hreblay & Thöny,1995, Facetta 11 (2): 24. Holotype ♂: Philippines, Luzon, Camarines sud., Naga Relay stn. Mt. Isarog, Ocampo (CWS).

Range (as code): **PH Luz Pq**

Material studied: 2♂ (GP3168): wingspan 58mm. Philippines: Luzon Is., Baguio, Mt. Pulaq 1500m, 10.i.1999, native collector (Cesa).

Other material of *Checupa*: 44♂♀. Philippines: Luzon Is., Baguio, Mt. Pulaq 1500m, 10.i.1999, native collector (Cesa). These specimens may belong to more than one species.

Remarks**:** The members of this genus has been reported in our previous papers as "*curvivena*", without the necessary checks of the genitalia. Recently we were able to obtain the copy of important paper, published by Hreblay & Thöny (1995) with the kind help of Mr. Péter Gyulai. After taking the male genitalia illustrated in this paper into consideration, we came to the conclusion that the population of *Checupa* inhabiting on Mt. Pulaq belongs to *major*, not to *curvivena*. This species can be identified by its male genitalia, and larger wing size. Under this circumstance, our all report of "*curvivena*" must be deleted. Other *Checupa* specimens in our collection from various islands will be separately studied. The species *curvivena* inhabits in Sumatra and Borneo only. On the other hand, Holloway (1989) illustrated the genitalia and scent organs at 8. abdominal segment of the male. Comparing scent organ, *major* has remarkably longer hair tuft than *curvivena* from Borneo **(Fig.)**. Holloway also stated about the taxon from the Philippines: "It may be best treated as a subspecies of *curvivena* but more material is needed". This is naturally a matter of discussion and should be also investigated.



Figs. 12, 13 – Male of *Blenina quinaria* (Noctuidae). Upperside of the moth, genitalia (GP3169) with a pair of scent organ, and abdominal segments. Bottom right: aedeagus (marked with black arrow) during preparation of the genitalia. Philippines, Luzon Is., Mt. Pulaq. M. Kemal (Cesa)

9.*Chrysodeixis eriosoma* (Doubleday,1843)

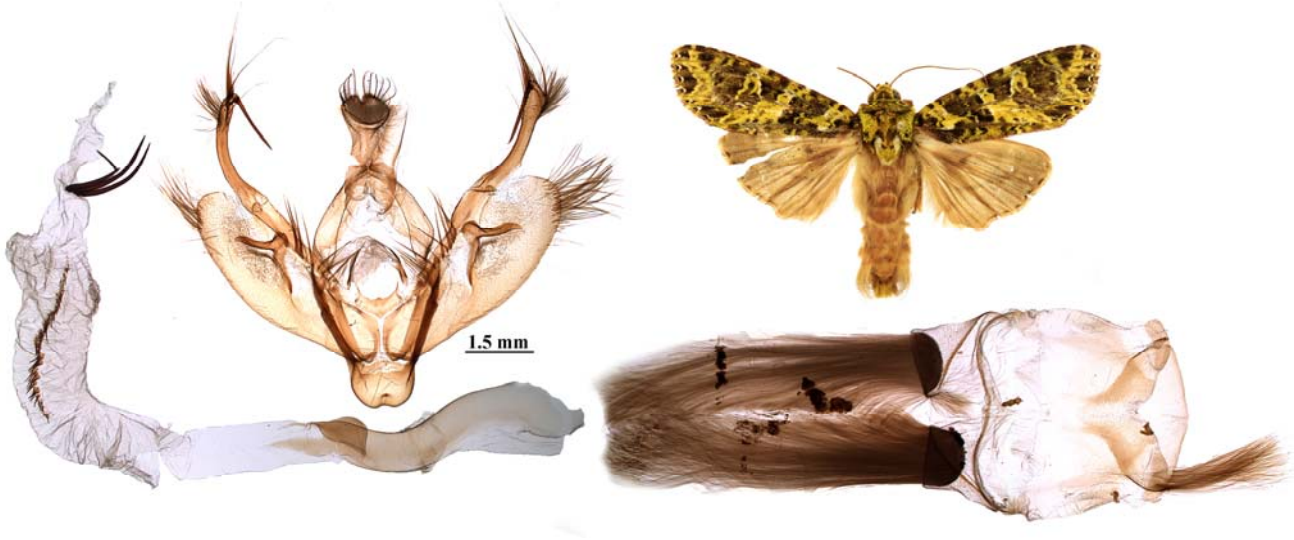
Synonymy: *eriosoma* Doubleday,1843; *verticillata* Guenée,1852

Original Reference: *Plusia eriosoma* Doubleday,1843, [in] Dieffenbach, Trav. New Zealand 2: 285.

Range (as code): **Tah NZ ID Ja Sum Tim Flo Sbw Bor PG TH Cbi CMa CDo Cuo Cu01 Cu06 Cu07 Nrt Bnk Nst VN MY KH MM IN NP PK CN TW JP KP KR PH Boh Mno Crg Neg Mpl Luz Pq NF NIr NC FJ AU OM SY EG**

Material studied: 1♂ (worn). Philippines: Luzon Is., Baguio, Mt. Pulaq 1500m, 10.i.1999, native collector (Cesa).

Remarks: This species was omitted in the previous paper (Kemal, *et al.*, 2019b).



Figs. 14, 15- Male of *Checupa major* (Noctuidae). Genitalia (GP3168), with removed aedeagus and abdominal scent organ. Upperside of moth. Philippines, Luzon Is., Mt. Pulaq. M. Kemal (Cesa)

10. *Conservula indica* (Moore,1867) (Fig. 21)

Synonymy: *indica* Moore,1867; *malayana* W.Warren,1915
Original Reference: *Phlogophora indica* Moore,1867, Proc. zool. Soc. London 1867: 57. Type: India: Bengal (coll. A.E.Russell).
Range (as codes): **TH CMa CDo Pki PK IN Ben Pj Hp Dlh NP BD MY ID Clb LA VN CN TW PH Mno Crg Luz Pq**
Material studied: 2♀. Philippines: Luzon Is., Baguio, Mt. Pulaq 1500m, 10.i.1999, native collector (Cesa).
Remarks: This species was previously reported from Caragan Mt. (Mindanao) by the authors (Kemal *et al.*, 2019a). New record for Luzon Island.

11. *Ctenoplusia (Acanthoplusia) dufayi* Behounek & L.Ronkay,1999

Synonymy:*dufayi* Behounek & L.Ronkay,1999
Original Reference: *Ctenoplusia (Acanthoplusia) dufayi* Behounek & L.Ronkay,1999, Spixiana 132-134, figs. Holotype ♂: Philippies, N-Luzon, Ifugao, Banaue, 20km nördl. Laguna 1200m, leg. K.Cerny & A.Schintlmeister (ZSM).
Range (as code): **PH Luz Ifg Pq**
Material studied: 2 ex. Philippines: Luzon Is., Baguio, Mt. Pulaq 1500m, 10.i.1999, native collector (Cesa).
Remarks: This species was omitted in the previous paper (Kemal, *et al.*, 2019b).

12. *Data thalpophiloides* Walker,1862 (Fig. 22)

Synonymy: *thalpophiloides* Walker,1862; *cuprea* Moore,1877; *dentilineata* Moore,1884
Original Reference: *Data thalpophiloides* Walker,1862, J. Linn. Soc. Lond. (Zool.) 6: 192. Lectotype ♀: Sarawak, designated by Swinhoe (1900) (OUMNH).
Range (as codes): **TH CMa Nan Knc IN Adm Nk LK MY Bor Swk ID Sum Ja Clb PH Luz Pq TW CN AU**
Material studied: 1♂. Philippines: Luzon Is., Baguio, Mt. Pulaq 1500m, 10.i.1999, native collector (Cesa).
Remarks: This species was omitted in the previous paper (Kemal, *et al.*, 2019b).

13. *Dictyestra dissectus* (Walker,1865)

Synonymy: *dissectus* Walker,1865; *crucifera* Felder & Rogenhofer,1874
Original Reference: *Heliophobus dissectus* Walker,1865, List Specimens lepid. Insects Colln Br. Mus. 32: 656. Syntypes: [Sri Lanka]: "Ceylon" (BMNH).
Range (as codes): **TH CMa IN LK NP MM VN ID PH Luz Pq MY Bor KBa ID Clb Mlc PG TW CN JP KP KR**
Material studied: 1 ex. Philippines: Luzon Is., Baguio, Mt. Pulaq 1500m, 10.i.1999, native collector (Cesa).

Remarks: The valid name was described from Sri Lanka, while the junior synonymous name *crucifera* from Luzon (Philippines). This species was omitted in the previous paper (Kemal, *et al.*, 2019b).

14.*Hypersypnoides umbrosa* (Butler,1881) (Fig. 23)

Synonymy: *umbrosa* Butler,1881

Original Reference: *Ercheia umbrosa* Butler,1881, Trans. ent. Soc. Lond. 1881: 194-195. Type: Japan: "Tokei (Fenton)".

Range (as code): **IN Ass Slo TH CMa Php NP CN TW PH Luz Pq**

Material studied: 4♀. Philippines: Luzon Is., Baguio, Mt. Pulaq 1500m, 10.i.1999, native collector (Cesa).

Remarks: This species was omitted in the previous paper (Kemal, *et al.*, 2019b). New for the fauna of the Philippines (Kononenko & Pinratana, 2005).

15.*Mocis frugalis* (Fabricius,1775)

Synonymy: *frugalis* Fabricius,1775; *lycopodia* Geyer,1837; *translata* Walker,1865.

Original Reference: *Noctua frugalis* Fabricius,1775, Syst. Ent.: 601. Type: India.

Range (as codes): **PC NC ZA Nta Kzu Dbn NG ZR MG ET ET24 YE Ad IN Mh Nsk LK Kndy Tcm MM TW Bor Ja ID AU WS FJ TO EL NH PG MY TH CMa Dst Cmz Cuo Cu01 LA KH PK PH Boh Luz Pq CV ST NE SD EG SO ZM MW ZW MG KM MU SC SA BH OM NP SI VN CN JP ID MY QAu NSw**

Material studied: 1♂. Philippines: Luzon Is., Baguio, Mt. Pulaq 1500m, 10.i.1999, native collector (Cesa).

Remarks: This common species was omitted in the previous paper (Kemal, *et al.*, 2019b).

16.*Macrobarasa xantholopha* (Hampson,1896)

Synonymy: *xantholopha* Hampson,1896; *albibasis* Wileman,1914

Original Reference: *Blenina xantholopha* Hampson,1896, Fauna Br. India (moths) 4: 526. Type ♂: India, Khasia Hills (BMNH).

Range (as codes): **IN Meg Khs TH CMa VN MY Bor ID Sum Clb Bru Crm PG PH Luz Pq TW CN JP**

Material studied: 1♀. Philippines: Luzon Is., Baguio, Mt. Pulaq 1500m, 10.i.1999, native collector (Cesa).

Remarks: This species was omitted in the previous paper (Kemal, *et al.*, 2019b).

17.*Mythimna (s.str.) albomarginata* (Wileman & South,1920) (Figs. 16-18)

Synonymy: *albomarginata* Wileman & South,1920; *albomarginalis* Wileman & West,1928

Original Reference: *Cirphis albomarginata* Wileman & South,1920, Entomologist 53: 122. Type: Philippines, Luzon, Benguet, Pauai, Haight's Place. Range (as code): **PH Luz Ifg Pq Mno Bkd Ktd ID Sum Ja MY Bor KBa TH CMa Fn Php Nan Pua NP TW**

Material studied: 1♀ (GP3166). Philippines: Luzon Is., Baguio, Mt. Pulaq 1500m, 10.i.1999, native collector (Cesa).

Remarks: The female genitalia of this species was previously illustrated by Hreblay *et al.* (1998: 420, fig.48). This species was omitted in the previous paper (Kemal, *et al.*, 2019b).

18.*Trachea auriplena* (Walker,1857) (Figs. 19, 20)

Synonymy: *auriplena* Walker,1857

Original Reference: *Eurois auriplena* Walker,1857, List spec. lepid. Ins. Colln. Br. Mus. 11: 557. Type ♀: [Sri Lanka]: Ceylon (BMNH).

Range (as codes): **LK Pdy TH CMa IN Up Bhi PK Sai Thu Ch NP BT VN TW CN PH Luz Pq**

Material studied: 2♂ (GP3164), 3♀. Philippines: Luzon Is., Baguio, Mt. Pulaq 1500m, 10.i.1999, native collector (Cesa).

Remarks: Its identity is based upon the external features. This species was listed previously as unidentified species (Kemal, *et al.*, 2019b: 21, nr.97). New for the fauna of the Philippines (Kononenko & Pinratana, 2013).

Figs. 16-18 - Female of *Mythimna albomarginata* (Noctuidae). Genitalia (GP3166). Upperside of moth (top left) and underside of moth (top right) . Philippines, Luzon Is., Mt. Pulaq. M. Kemal (Cesa)

Figs. 19, 20- *Trachea auriplena* (Noctuidae). Upperside of male and male genitalia (GP3164), with an opposite side image of aedeagus tip. Philippines, Luzon Is., Mt. Pulaq. M. Kemal (Cesa)

Notodontidae

19. *Somera viridifusca* Walker,1855 (Fig. 24)

Synonymy: viridifusca Walker,1855

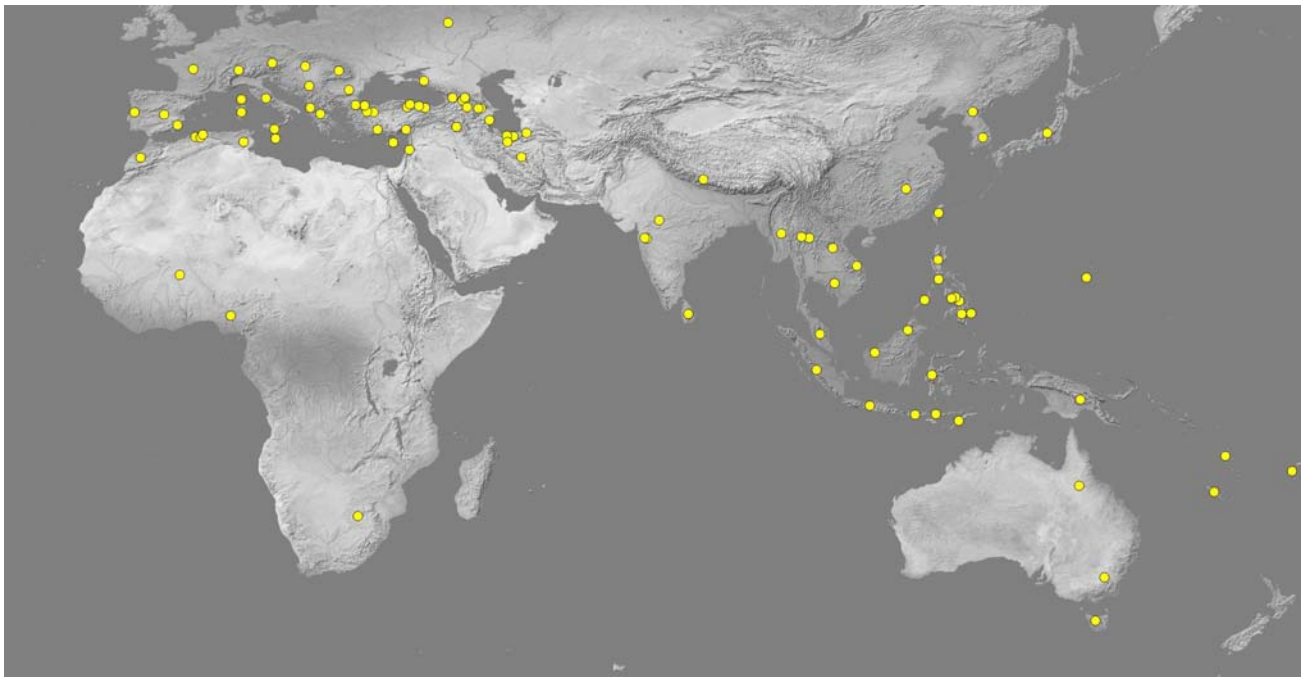
Original Reference: *Somera viridifusca* Walker,1855, List Spec. lepid. Insects Colln Brit. Mus. 4: 822. Type: [Bangladesh]: Sylhet.

Range (as code): **IN BD Syl LK TW ID Clb PH Luz Pq Pal Mno Bnn Crg Bor MY Sum Ja NP TH TW VN Ton Fan Tgi Cuc M-c Tda N-l CN Yu**

Material studied: 1♂. Philippines: Luzon Is., Baguio, Mt. Pulaq 1500m, 10.i.1999, native collector (Cesa).
Remarks: The populations from Luzon of this species was described by Schintlmeister (1993) as ssp. *luzonensis*. The present identity of our specimen is based on the revisional work of Schintlmeister & Lourens (2010). This species was omitted in the previous paper (Kemal, *et al.*, 2019b).

Figs. 21, 22 – Upperside of *Conservula indica* (Noctuidae) (left). Upperside of *Data thalpophiloides* (Noctuidae) (right). Both from Philippines, Luzon Is., Mt. Pulaq. M. Kemal (Cesa)

Figs. 23, 24 – Upperside of *Hypersypnoides umbrosa* (Noctuidae) (left). Upperside of *Somera viridifusca* (Notodontidae) (right). Both from Philippines, Luzon Is., Mt. Pulaq. M. Kemal (Cesa)



Map 1- *Aedia leucomeas* (Noctuidae).

Pyralidae

20.*Agathodes caliginosalis* Snellen,1895

Synonymy: *caliginosalis* Snellen,1895

Original Reference: *Agathodes caliginosalis* Snellen,1895, Tijdschr. Ent. 38: 147. Lectotype ♂: Java.

Range (as codes): **ID Ja TH CMa Cuo Cuo9 PH Ley Blc Boh Cco Luz Pq**

Material studied: 2 ex. Philippines: Luzon Is., Baguio, Mt. Pulaq 1500m, 10.i.1999, native collector (Cesa).

Remarks: This species was omitted in the previous paper (Kemal, *et al*., 2019b).

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Corrigendum:

"Annonated" read as "Annotated" in the previous paper of the authors:

Kemal,M., Kızıldağ,S. & A.Ö.Koçak, 2019. Annonated list of the Heterocera (Lepidoptera) of Mount Pulaq (Luzon Island, Philippines). *Priamus* 18 (1): 1-29, 51 figs. 1 map

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